FIG. 1

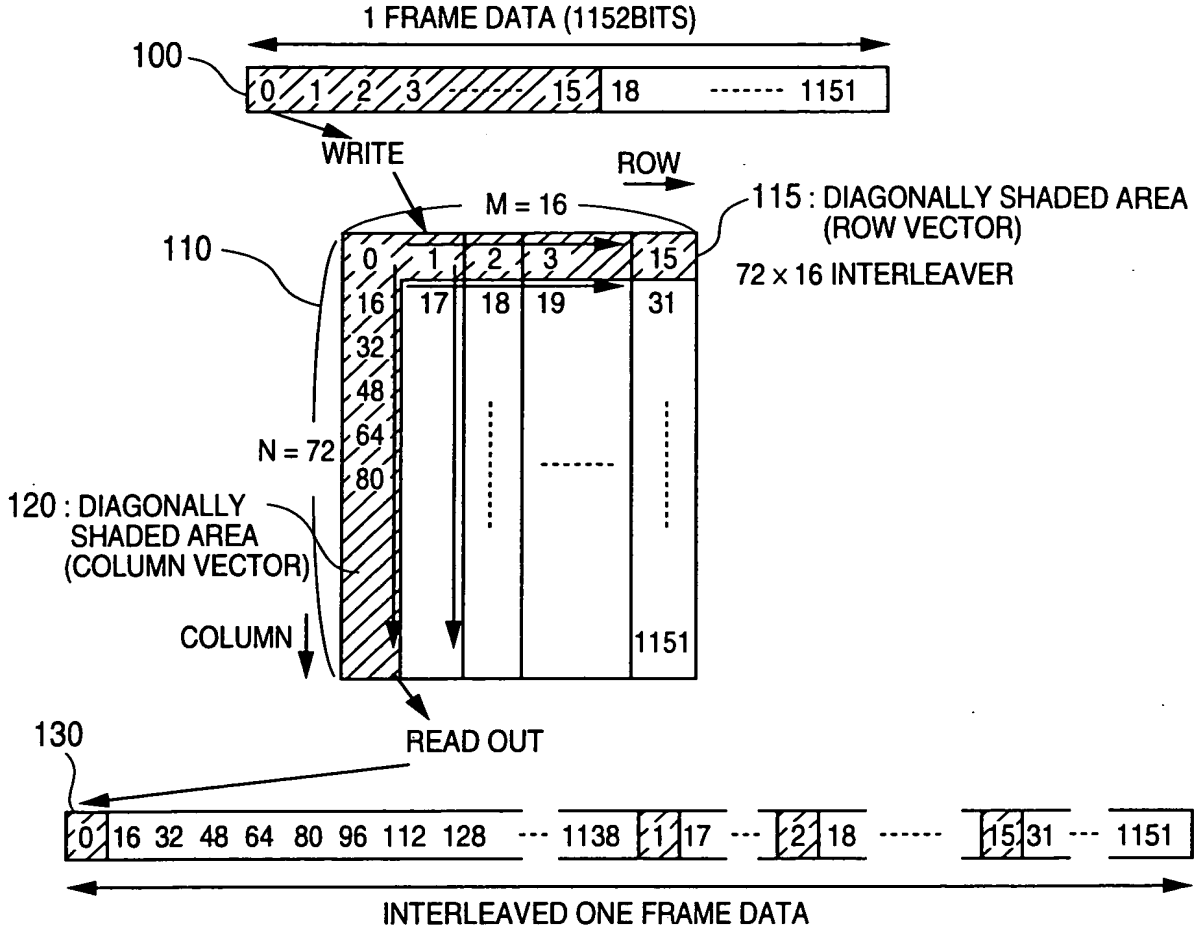
1 FRAME DATA (1152BITS)
100
0 1 2 3 ------ 15 18 ------- 1151
WRITE
ROW
M = 16
115 : DIAGONALLY SHADED AREA
(ROW VECTOR)
72 x 16 INTERLEAVER
110
0 1 2 3 15
16 17 18 19 31
32
48
64
80
N = 72
120 : DIAGONALLY
SHADED AREA
(COLUMN VECTOR)
COLUMN
1151
READ OUT
130
0 16 32 48 64 80 96 112 128 --- 1138 1 17 --- 2 18 ------ 15 31 --- 1151
INTERLEAVED ONE FRAME DATA

FIG. 2

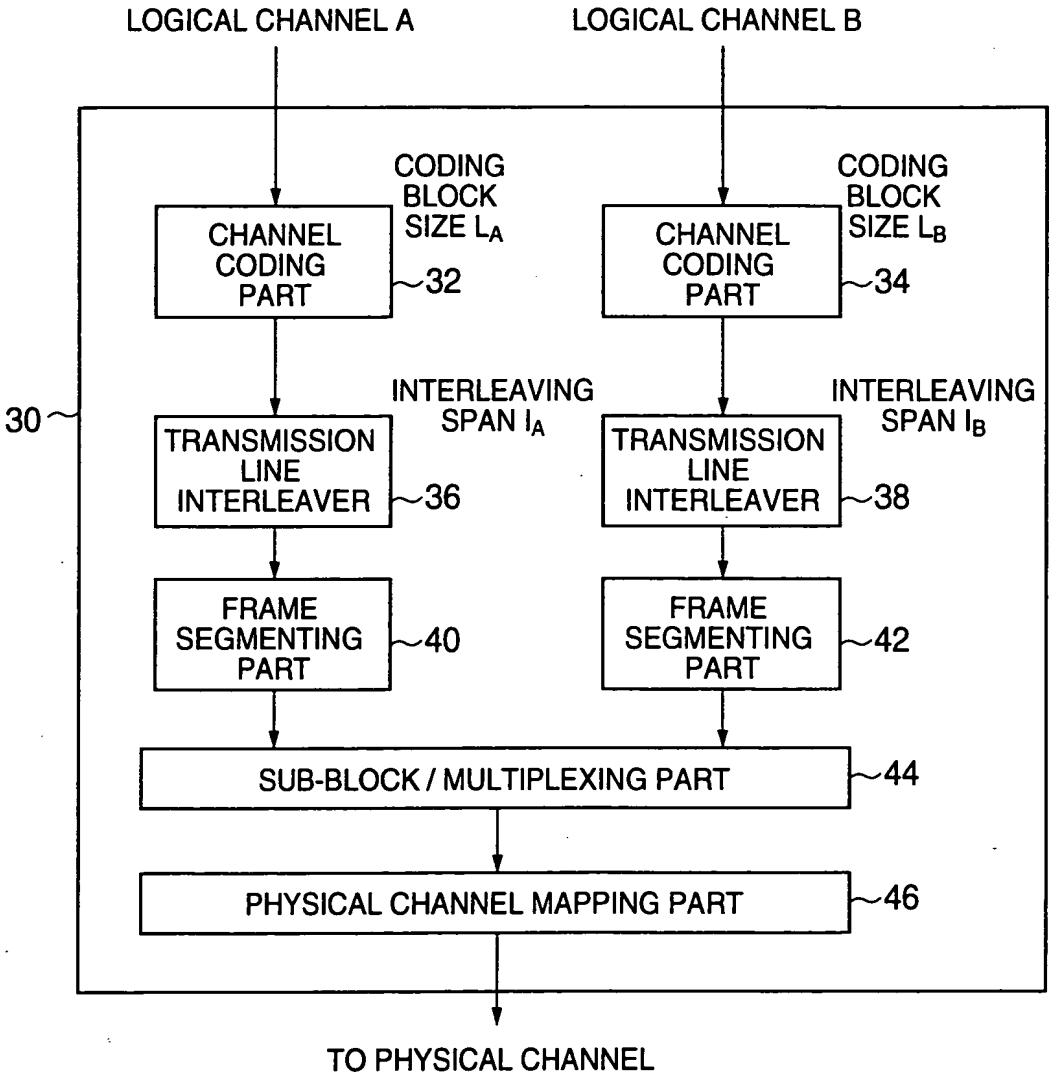
LOGICAL CHANNEL A
LOGICAL CHANNEL B
30
CODING BLOCK SIZE L_A
CHANNEL CODING PART
32
CODING BLOCK SIZE L_B
CHANNEL CODING PART
34
INTERLEAVING SPAN I_A
TRANSMISSION LINE INTERLEAVER
36
INTERLEAVING SPAN I_B
TRANSMISSION LINE INTERLEAVER
38
FRAME SEGMENTING PART
40
FRAME SEGMENTING PART
42
SUB-BLOCK / MULTIPLEXING PART
44
PHYSICAL CHANNEL MAPPING PART
46
TO PHYSICAL CHANNEL

FIG. 3

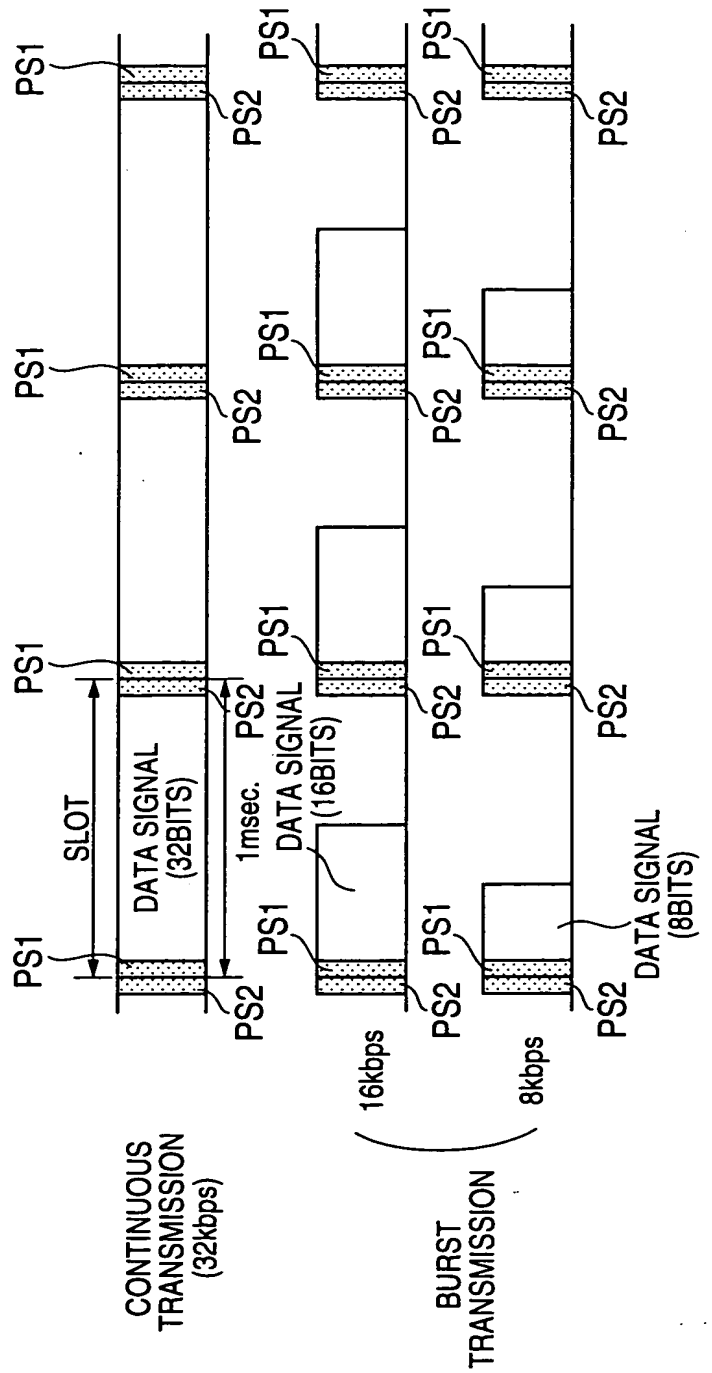
PS1
PS2
SLOT
DATA SIGNAL (32BITS)
1msec.
DATA SIGNAL (16BITS)
DATA SIGNAL (8BITS)
16kbps
8kbps
CONTINUOUS TRANSMISSION (32kbps)
BURST TRANSMISSION

FIG. 4

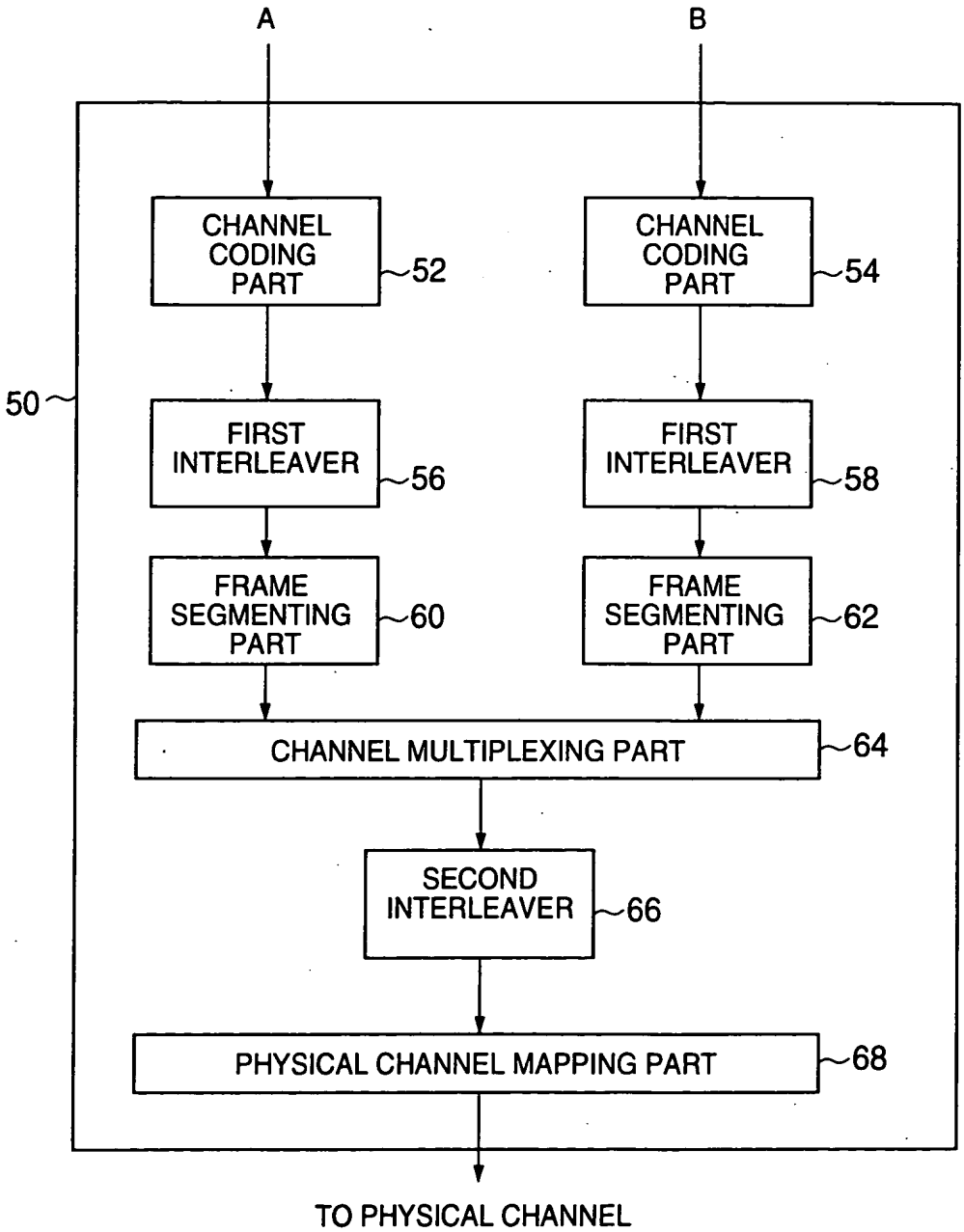
A
B
CHANNEL CODING PART
52
CHANNEL CODING PART
54
50
FIRST INTERLEAVER
56
FIRST INTERLEAVER
58
FRAME SEGMENTING PART
60
FRAME SEGMENTING PART
62
CHANNEL MULTIPLEXING PART
64
SECOND INTERLEAVER
66
PHYSICAL CHANNEL MAPPING PART
68
TO PHYSICAL CHANNEL

FIG. 5

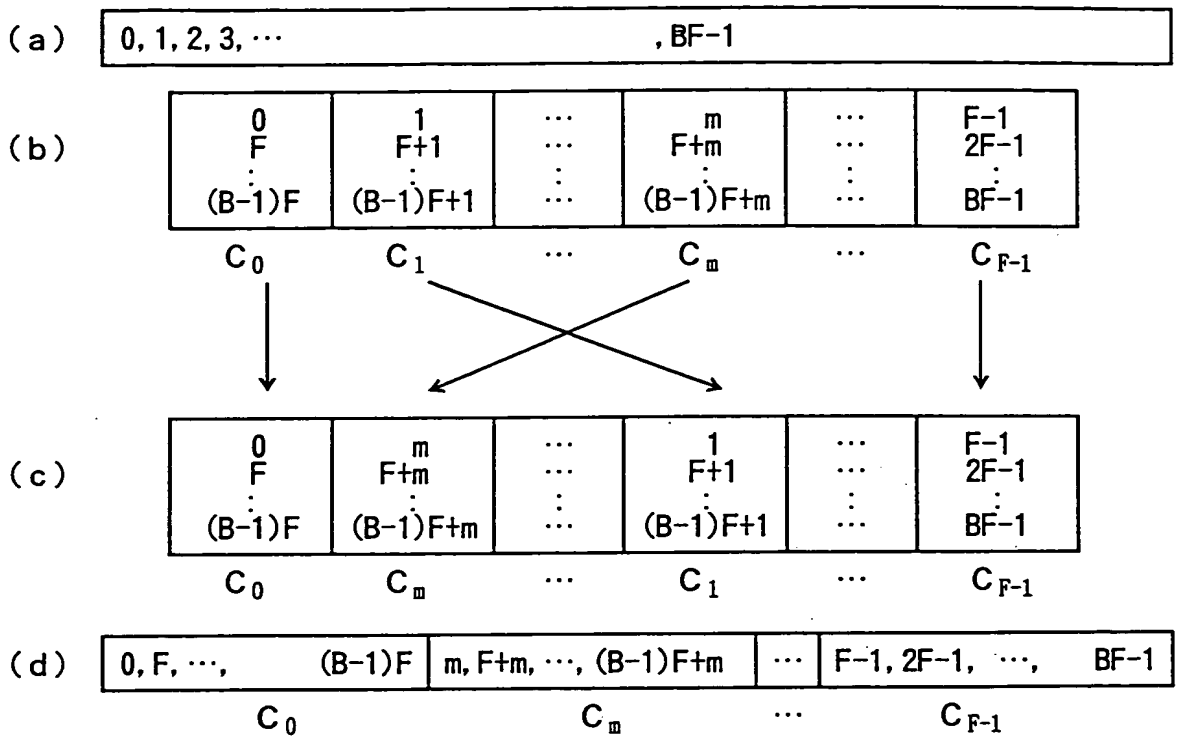
(a)
0, 1, 2, 3, ···
, BF-1
(b)
0
F
(B-1)F
1
F+1
(B-1)F+1
m
F+m
(B-1)F+m
F-1
2F-1
BF-1
C0
C1
Cm
CF-1
(c)
0
F
(B-1)F
m
F+m
(B-1)F+m
1
F+1
(B-1)F+1
F-1
2F-1
BF-1
C0
Cm
C1
CF-1
(d)
0, F, ···, (B-1)F
m, F+m, ···, (B-1)F+m
F-1, 2F-1, ···, BF-1
C0
Cm
CF-1

FIG. 6

INTERLEAVING SPAN	NUMBER OF COLUMN	COLUMN RANDOMIZING PATTERN
10ms	1	C_0
20ms	2	C_0, C_1
40ms	4	C_0, C_2, C_1, C_3
80ms	8	$C_0, C_4, C_2, C_6, C_1, C_5, C_3, C_7$

FIG. 7

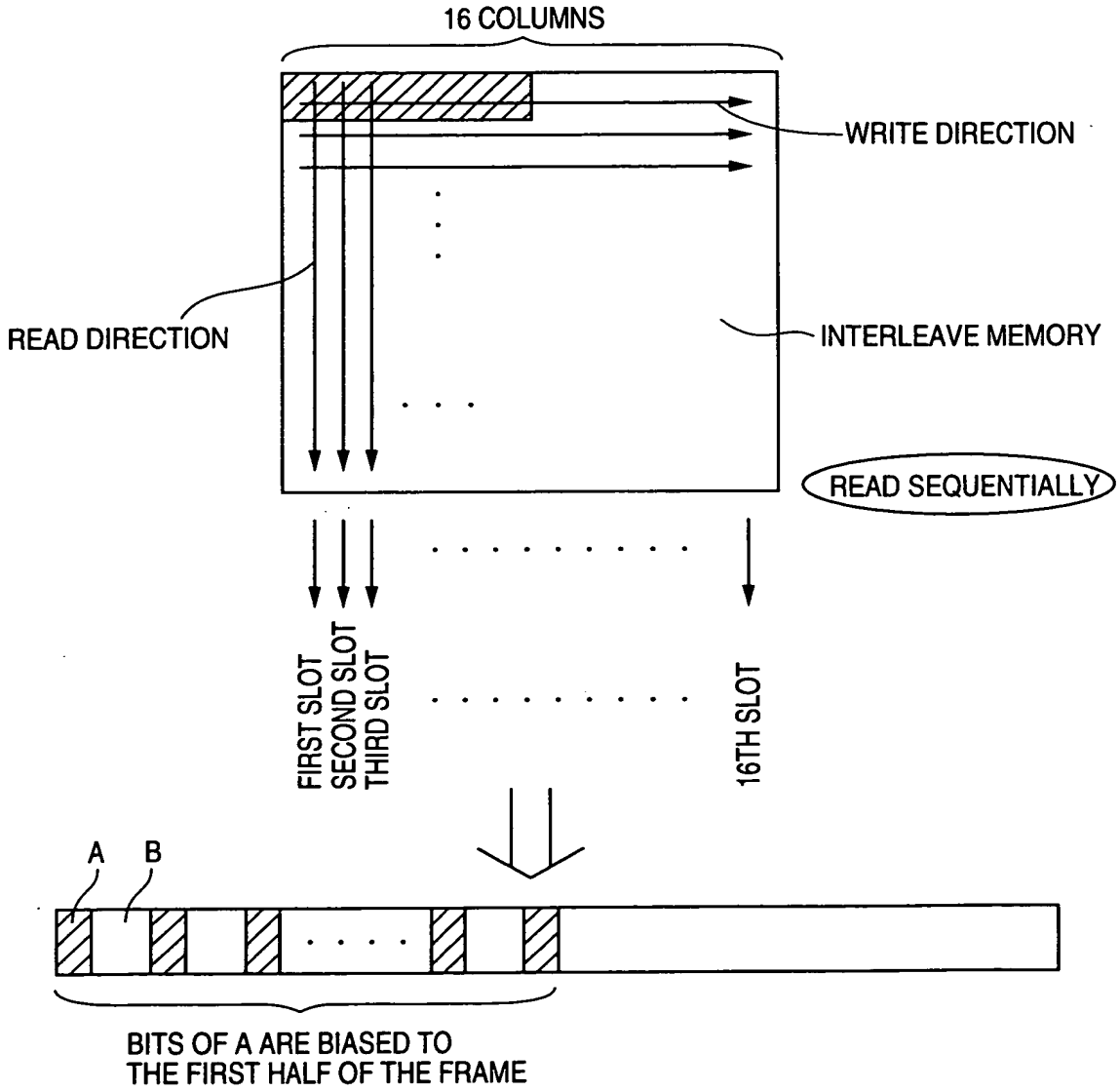
16 COLUMNS
WRITE DIRECTION
READ DIRECTION
INTERLEAVE MEMORY
READ SEQUENTIALLY
FIRST SLOT
SECOND SLOT
THIRD SLOT
16TH SLOT
A
B
BITS OF A ARE BIASED TO
THE FIRST HALF OF THE FRAME

FIG. 8

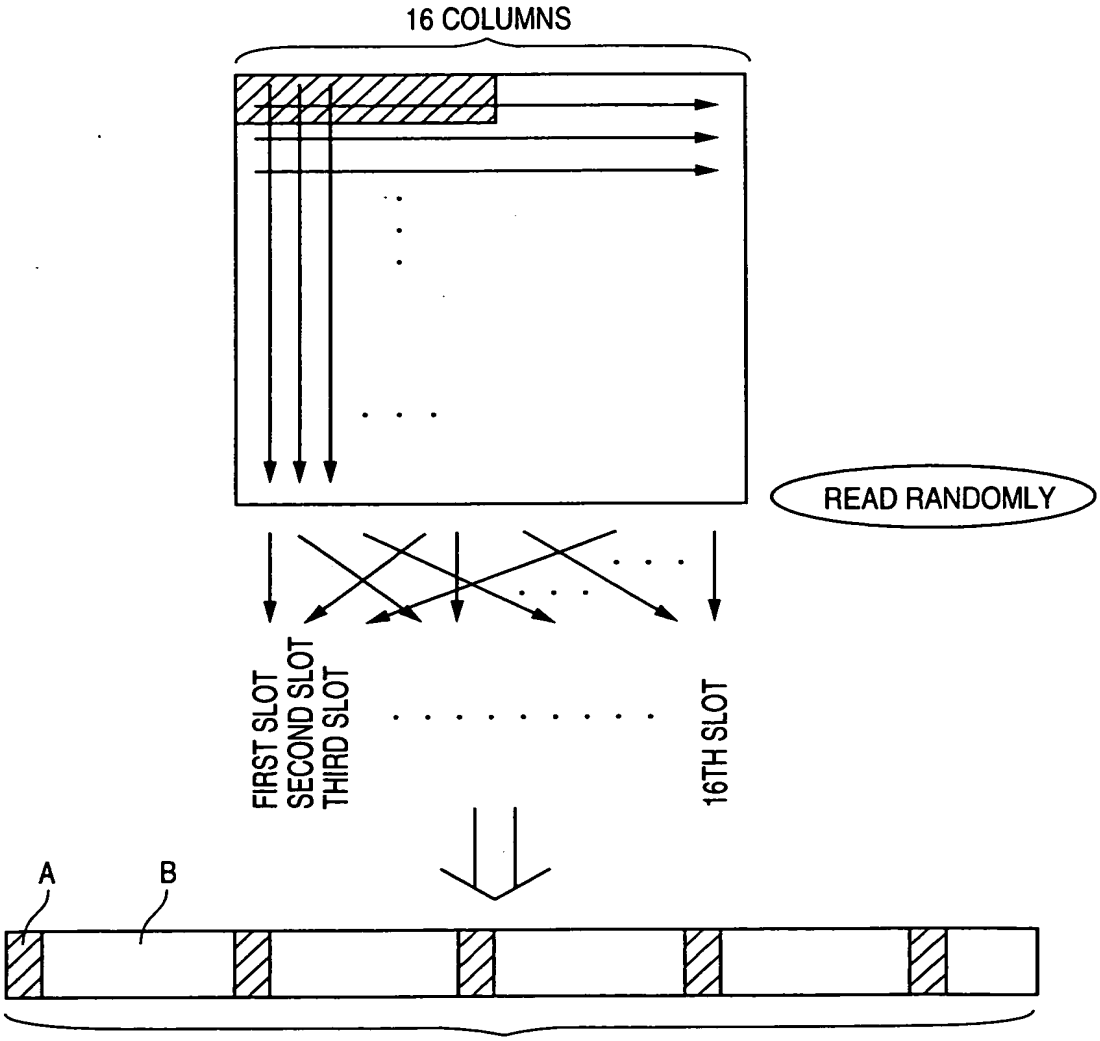
16 COLUMNS
READ RANDOMLY
FIRST SLOT
SECOND SLOT
THIRD SLOT
16TH SLOT
A
B
BITS OF A ARE SPREAD OUT OVER THE WHOLE FRAME

FIG. 9

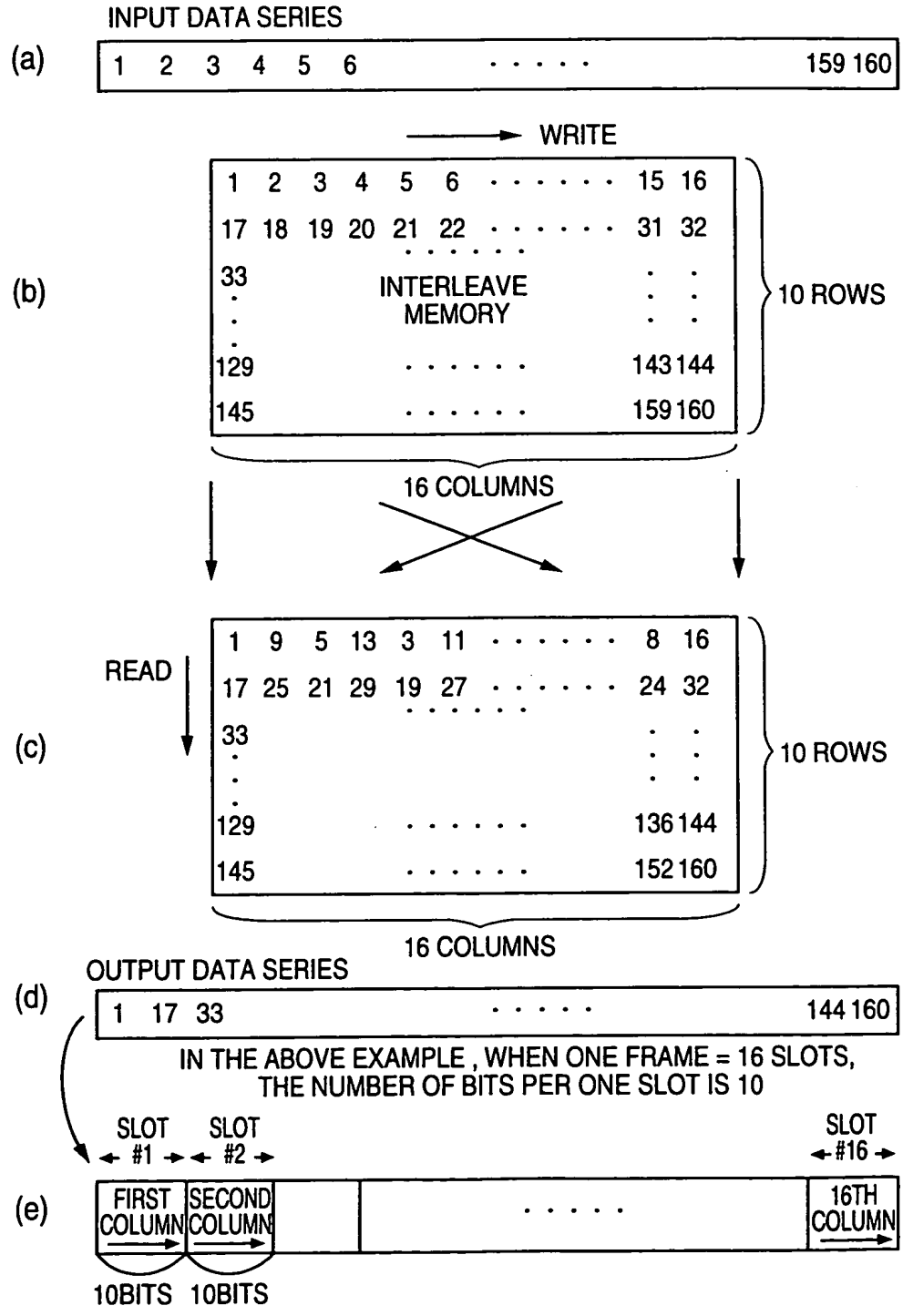
INPUT DATA SERIES
(a)
1 2 3 4 5 6 . . . . . 159 160
WRITE
(b)
1 2 3 4 5 6 . . . . . 15 16
17 18 19 20 21 22 . . . . . 31 32
33
129 . . . . . 143 144
145 . . . . . 159 160
INTERLEAVE MEMORY
10 ROWS
16 COLUMNS
READ
(c)
1 9 5 13 3 11 . . . . . 8 16
17 25 21 29 19 27 . . . . . 24 32
33
129 . . . . . 136 144
145 . . . . . 152 160
10 ROWS
16 COLUMNS
OUTPUT DATA SERIES
(d)
1 17 33 . . . . . 144 160
IN THE ABOVE EXAMPLE , WHEN ONE FRAME = 16 SLOTS,
THE NUMBER OF BITS PER ONE SLOT IS 10
SLOT #1
SLOT #2
SLOT #16
(e)
FIRST COLUMN
SECOND COLUMN
16TH COLUMN
10BITS
10BITS

FIG. 10

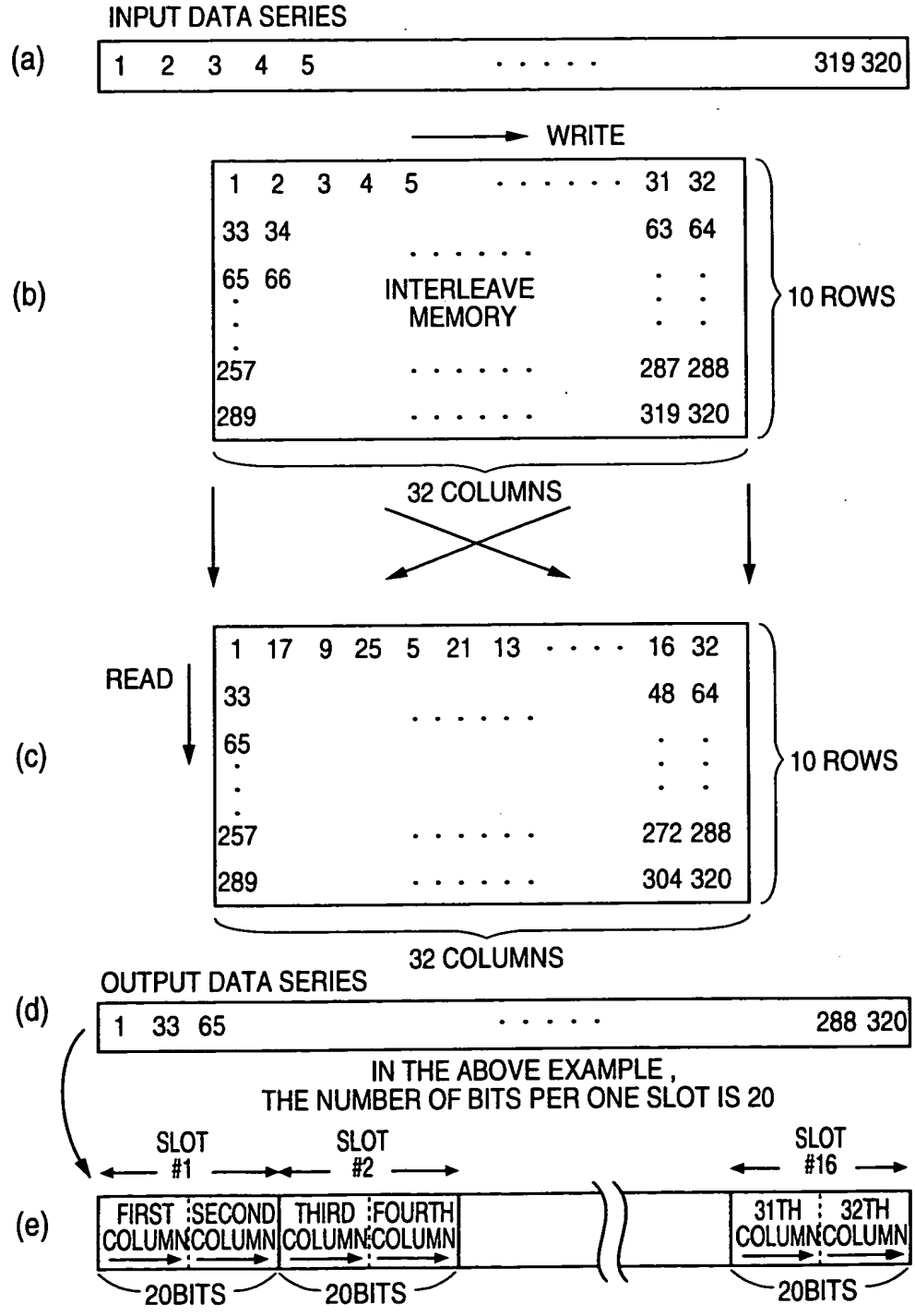
INPUT DATA SERIES
(a)
1 2 3 4 5 . . . . . 319 320
WRITE
(b)
1 2 3 4 5 . . . . . 31 32
33 34 63 64
65 66
INTERLEAVE MEMORY
257 287 288
289 319 320
10 ROWS
32 COLUMNS
READ
(c)
1 17 9 25 5 21 13 . . . . 16 32
33 48 64
65
257 272 288
289 304 320
10 ROWS
32 COLUMNS
OUTPUT DATA SERIES
(d)
1 33 65 . . . . . 288 320
IN THE ABOVE EXAMPLE,
THE NUMBER OF BITS PER ONE SLOT IS 20
SLOT #1
SLOT #2
SLOT #16
(e)
FIRST COLUMN
SECOND COLUMN
THIRD COLUMN
FOURTH COLUMN
31TH COLUMN
32TH COLUMN
20BITS
20BITS
20BITS

FIG. 11

NUMBER OF COLUMN	INTERLEAVE PATTERN
2	0,1
3	0,1,2
4	0,2,1,3
5	0,3,1,4,2
6	0,2,4,1,3,5
7	0,3,6,2,5,1,4
8	0,4,2,6,1,5,3,7
9	0,3,6,1,4,7,2,5,8
10	0,4,8,2,6,1,5,9,3,7
11	0,5,10,2,7,4,9,1,6,3,8
13	0,9,3,12,6,2,11,5,8,1,10,4,7
15	0,9,3,12,6,1,10,4,13,7,2,11,5,14,8
16	0,8,4,12,2,10,6,14,1,9,5,13,3,11,7,15
17	0,10,5,15,2,7,12,4,9,14,1,6,11,16,3,8,13
20	0,10,5,15,2,12,7,17,4,14,9,19,1,11,6,16,3, 13,8,18
30	0,10,20,5,15,25,3,13,23,8,18,28,1,11,21, 6,16,26,4,14,24,9,19,29,2,12,22,7,17,27
32	0,16,8,24,4,20,12,28,2,18,10,26,6,22,14,30, 1,17,9,25,5,21,13,29,3,19,11,27,7,23,15,31
64	0,32,16,48,8,40,24,56,4,36,20,52,12,44,28, 60,2,34,18,50,10,42,26,58,6,38,22,54,14,46, 30,62,1,33,17,49,9,41,25,57,5,37,21,53,13, 45,29,61,3,35,19,51,11,43,27,59,7,39,23,55, 15,47,31,63
128	0,64,32,96,16,80,48,112,8,72,40,104,24,88, 56,120,4,68,36,100,20,84,52,116,12,76,44, 108,28,92,60,124,2,66,34,98,18,82,50,114,10 74,42,106,26,90,58,122,6,70,38,102,22,86,54, 118,14,78,46,110,30,94,62,126,1,65,33,97,17, 81,49,113,9,73,41,105,25,89,57,121,5,69,37, 101,21,85,53,117,13,77,45,109,29,93,61,125, 3,67,35,99,19,83,51,115,11,75,43,107,27,91 59,123,7,71,39,103,23,87,55,119,15,79,47, 111,31,95,63,127

FIG. 12

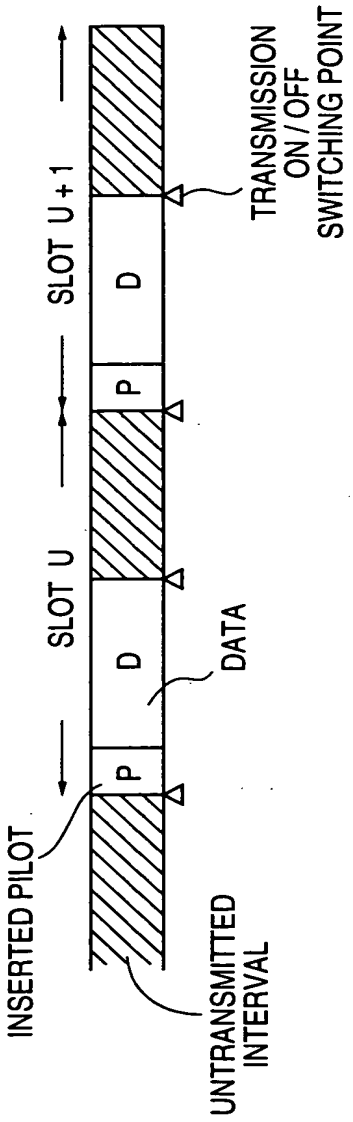
SLOT U
SLOT U+1
P
D
P
D
DATA
INSERTED PILOT
UNTRANSMITTED INTERVAL
TRANSMISSION ON/OFF SWITCHING POINT

FIG.13

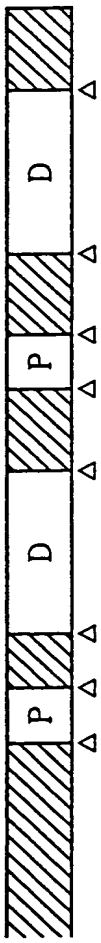

FIG. 14

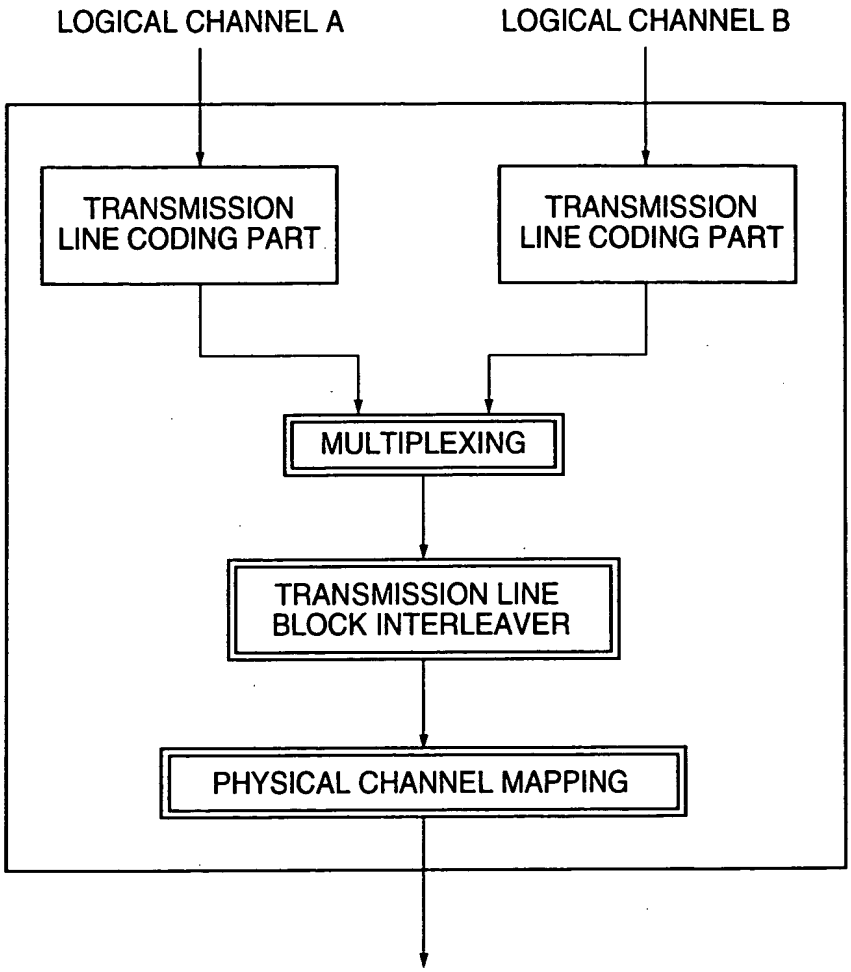

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FIG. 15

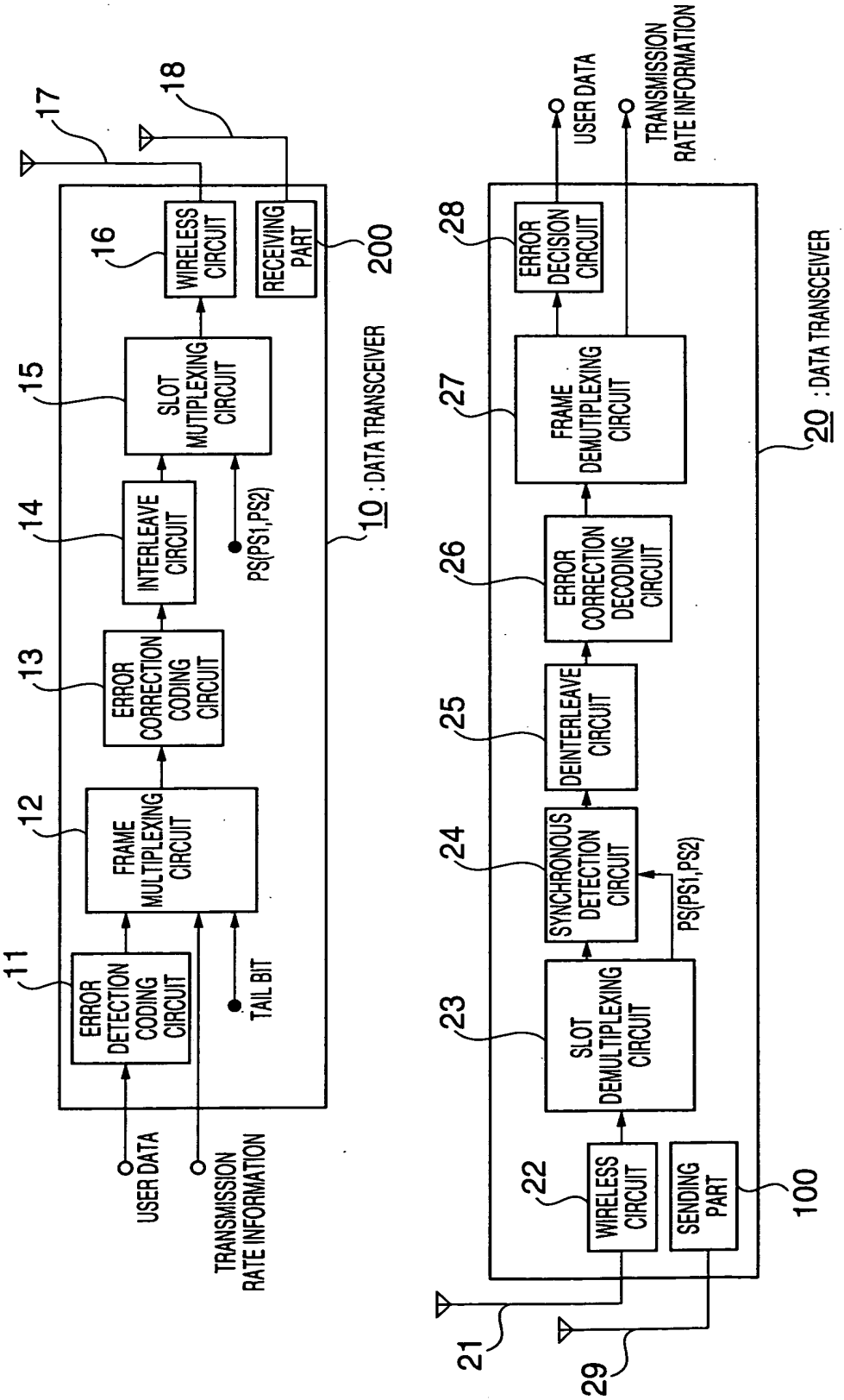

ERROR DETECTION CODING CIRCUIT
FRAME MULTIPLEXING CIRCUIT
ERROR CORRECTION CODING CIRCUIT
INTERLEAVE CIRCUIT
SLOT MUTIPLEXING CIRCUIT
WIRELESS CIRCUIT
RECEIVING PART
USER DATA
TRANSMISSION RATE INFORMATION
TAIL BIT
PS(PS1,PS2)
10 : DATA TRANSCEIVER
200
11
12
13
14
15
16
17
18
WIRELESS CIRCUIT
SENDING PART
SLOT DEMULTIPLEXING CIRCUIT
SYNCHRONOUS DETECTION CIRCUIT
DEINTERLEAVE CIRCUIT
ERROR CORRECTION DECODING CIRCUIT
FRAME DEMUTIPLEXING CIRCUIT
ERROR DECISION CIRCUIT
USER DATA
TRANSMISSION RATE INFORMATION
PS(PS1,PS2)
20 : DATA TRANSCEIVER
100
21
22
23
24
25
26
27
28
29

FIG. 16

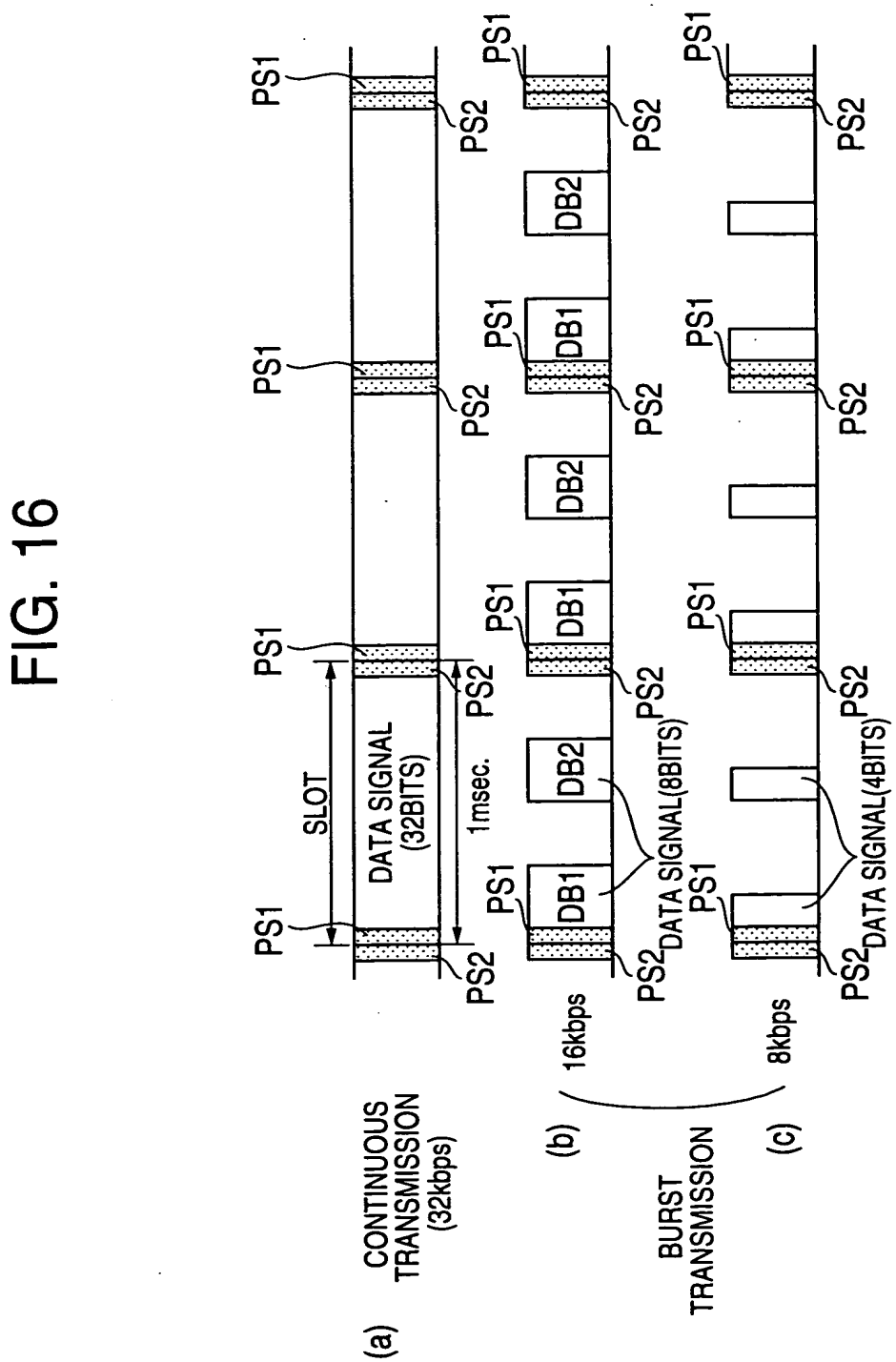

PS1
PS2
DB1
DB2
SLOT
DATA SIGNAL (32BITS)
1msec.
DATA SIGNAL(8BITS)
DATA SIGNAL(4BITS)
(a) CONTINUOUS TRANSMISSION (32kbps)
(b) 16kbps
(c) 8kbps
BURST TRANSMISSION

FIG. 17

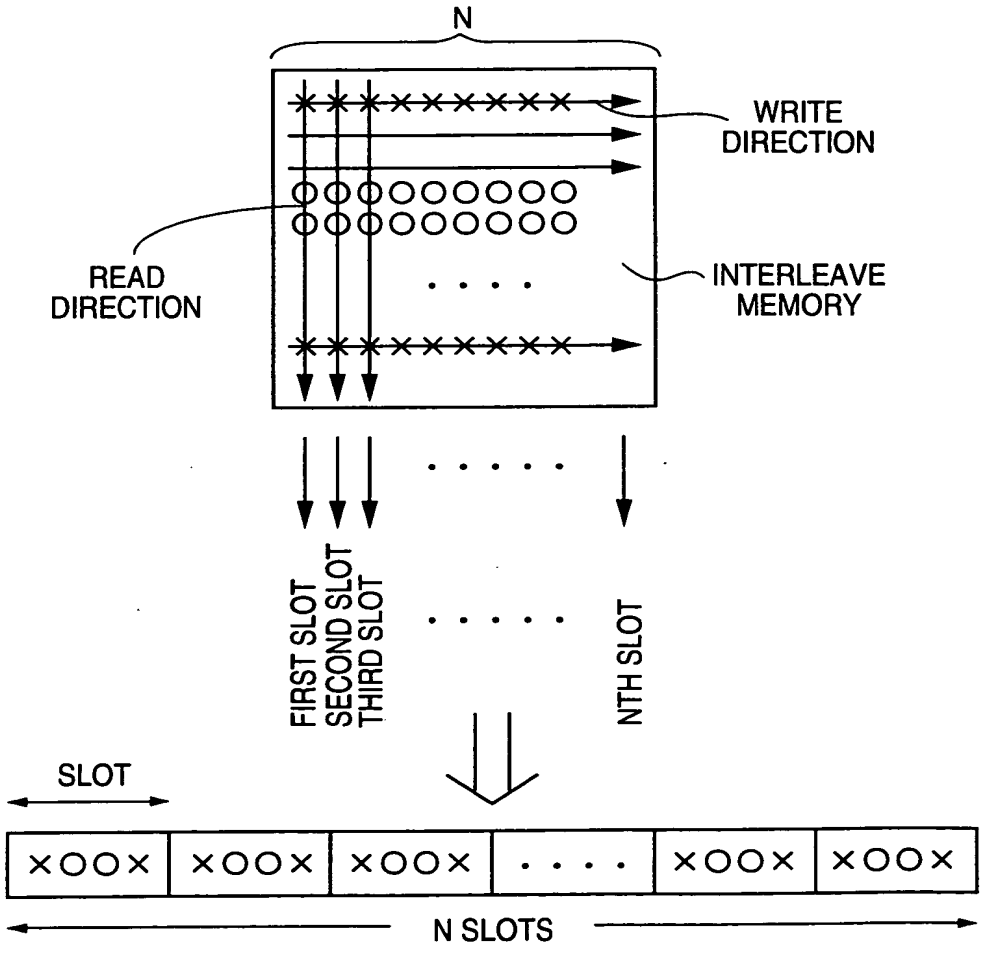

N
WRITE DIRECTION
READ DIRECTION
INTERLEAVE MEMORY
FIRST SLOT
SECOND SLOT
THIRD SLOT
NTH SLOT
SLOT
N SLOTS

FIG. 18

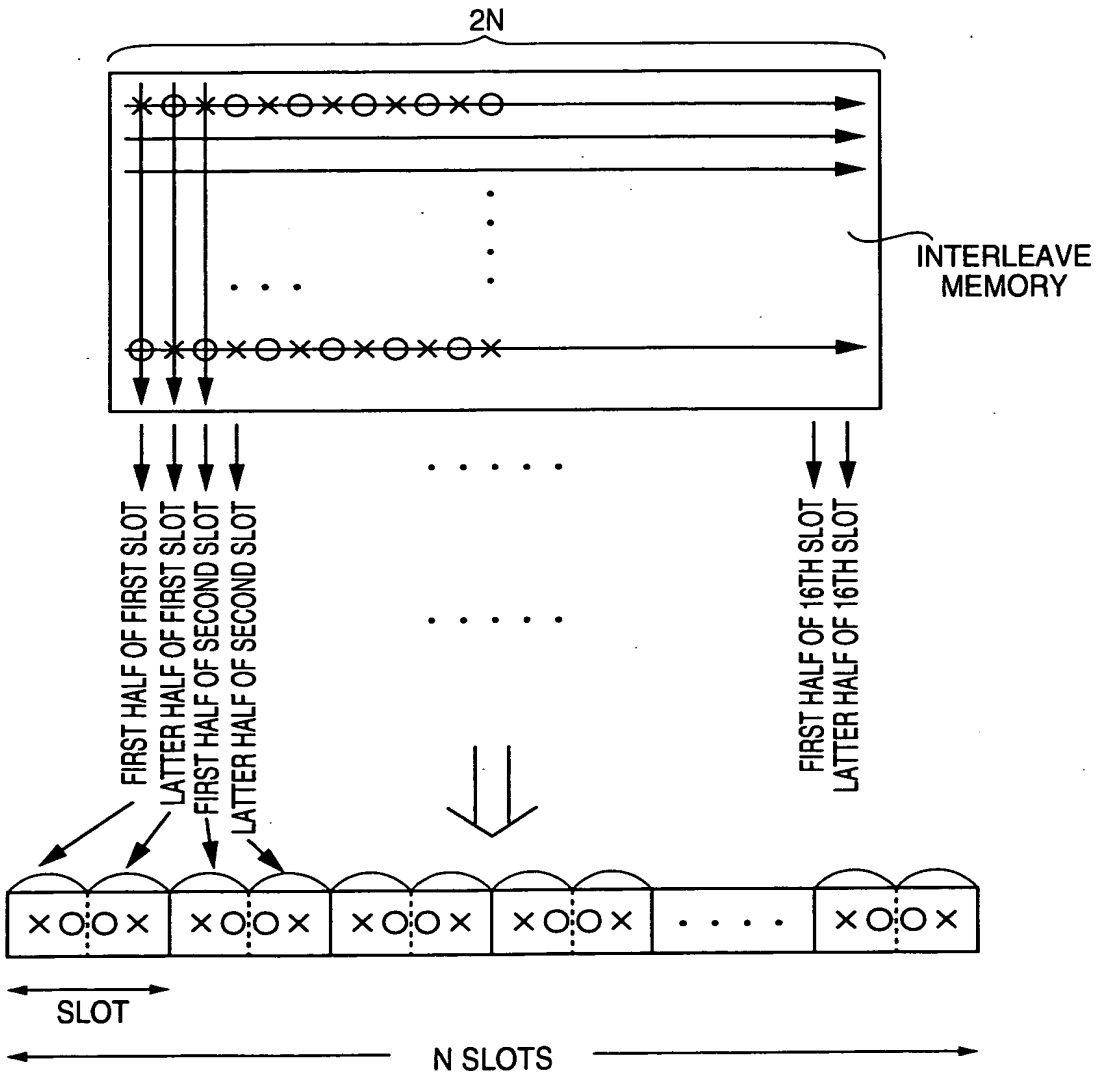

2N
INTERLEAVE MEMORY
FIRST HALF OF FIRST SLOT
LATTER HALF OF FIRST SLOT
FIRST HALF OF SECOND SLOT
LATTER HALF OF SECOND SLOT
FIRST HALF OF 16TH SLOT
LATTER HALF OF 16TH SLOT
SLOT
N SLOTS

FIG. 19

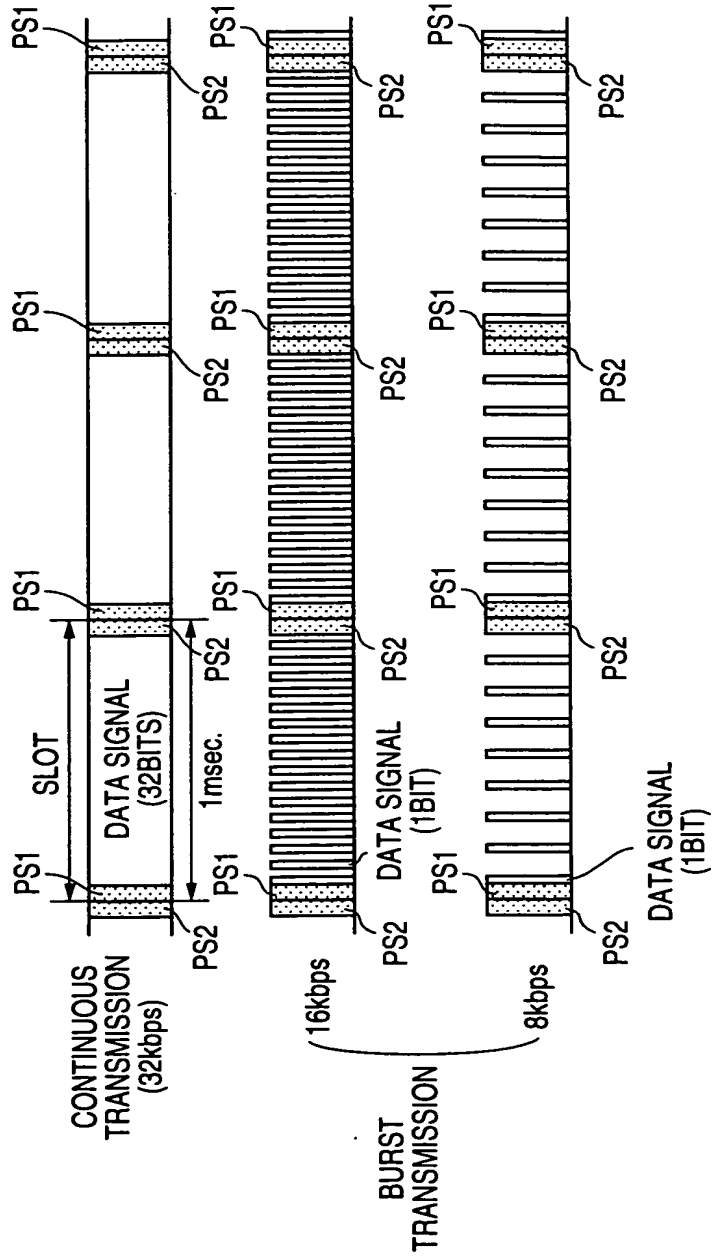

PS1
PS2
SLOT
DATA SIGNAL (32BITS)
1msec.
CONTINUOUS TRANSMISSION (32kbps)
DATA SIGNAL (1BIT)
16kbps
8kbps
BURST TRANSMISSION
DATA SIGNAL (1BIT)

FIG. 20

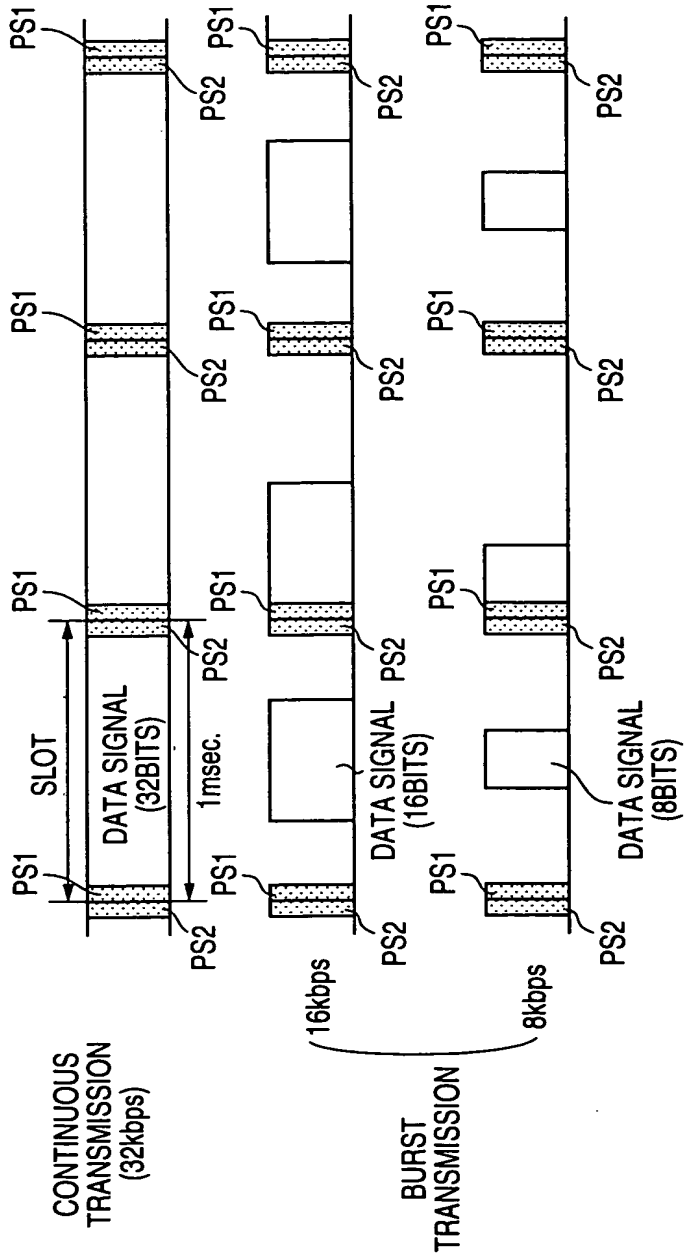

PS1
PS2
SLOT
DATA SIGNAL (32BITS)
1msec.
DATA SIGNAL (16BITS)
DATA SIGNAL (8BITS)
16kbps
8kbps
CONTINUOUS TRANSMISSION (32kbps)
BURST TRANSMISSION

FIG. 21

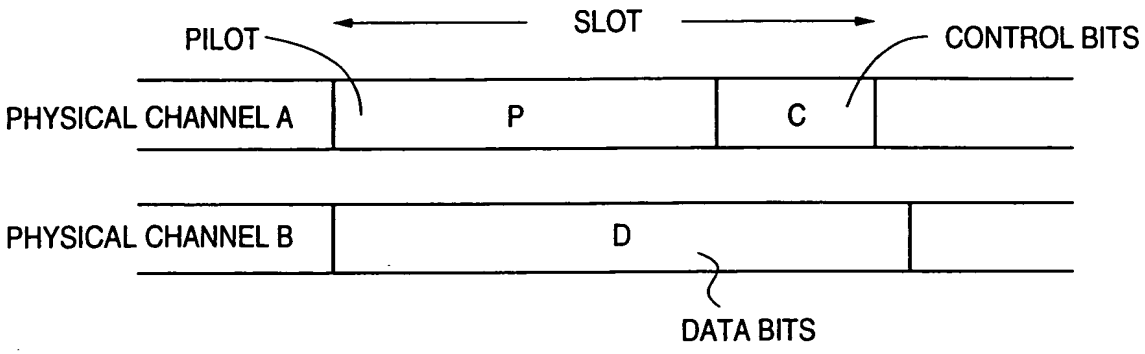

SLOT
PILOT
CONTROL BITS
PHYSICAL CHANNEL A
P
C
PHYSICAL CHANNEL B
D
DATA BITS

FIG.22

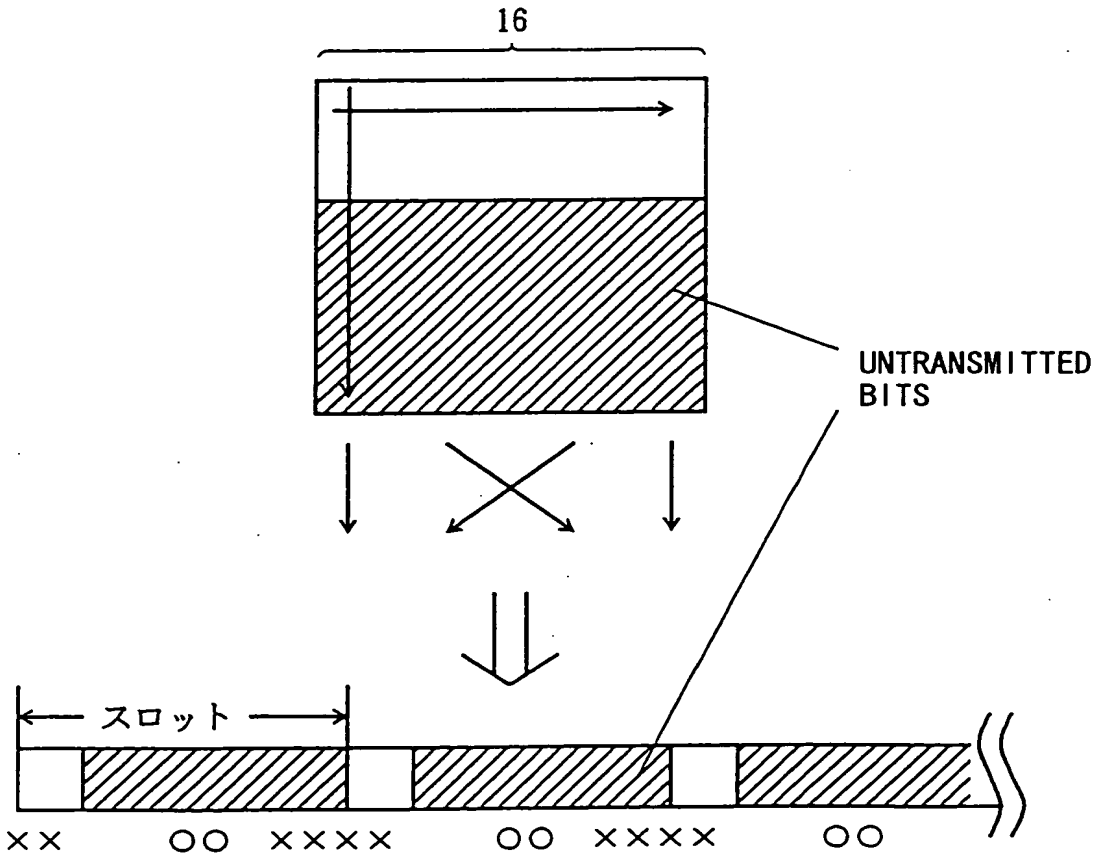


FIG.23

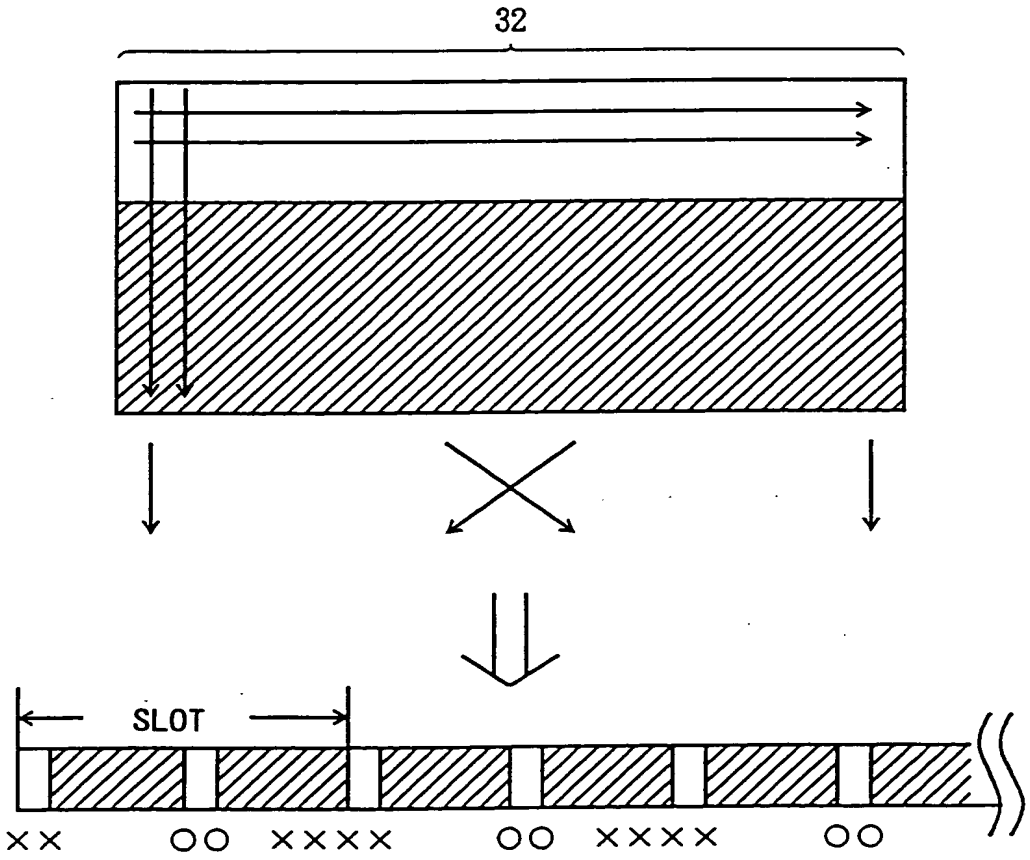


FIG. 24

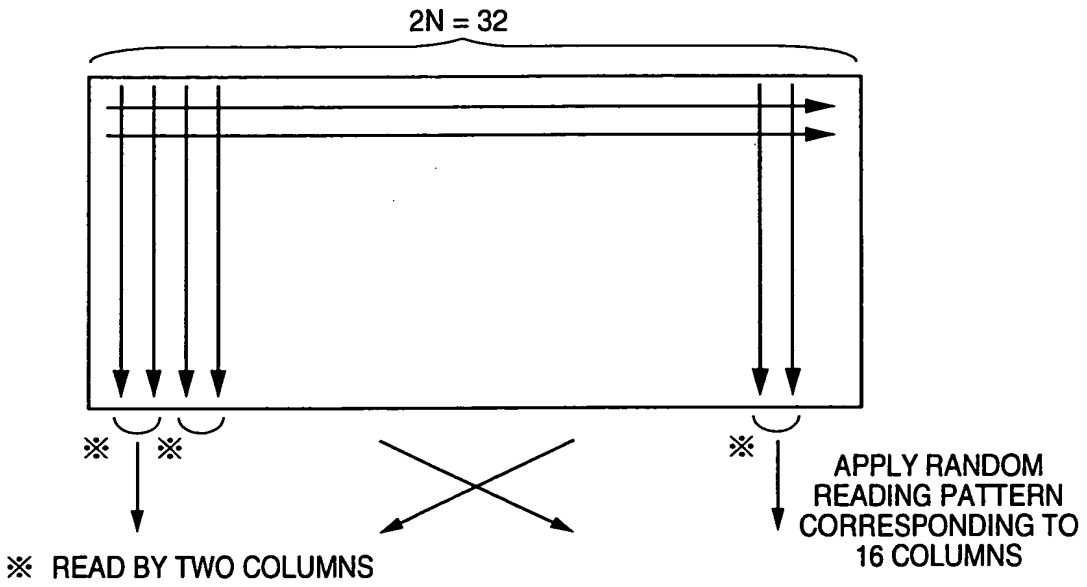

2N = 32
※
※
※
APPLY RANDOM READING PATTERN CORRESPONDING TO 16 COLUMNS
※ READ BY TWO COLUMNS

FIG. 25

INPUT BIT SERIES
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 ... 159
8 COLUMNS
(a)
PERMUTATION
(b)
BIT QUALITY
(c)
(d)
x x x x x x x x x x x x x x x x o o
0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17, ...
(e)
x o o x x o o x x o o x x o o x x o
0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17, ...
PERMUTATION

FIG. 26

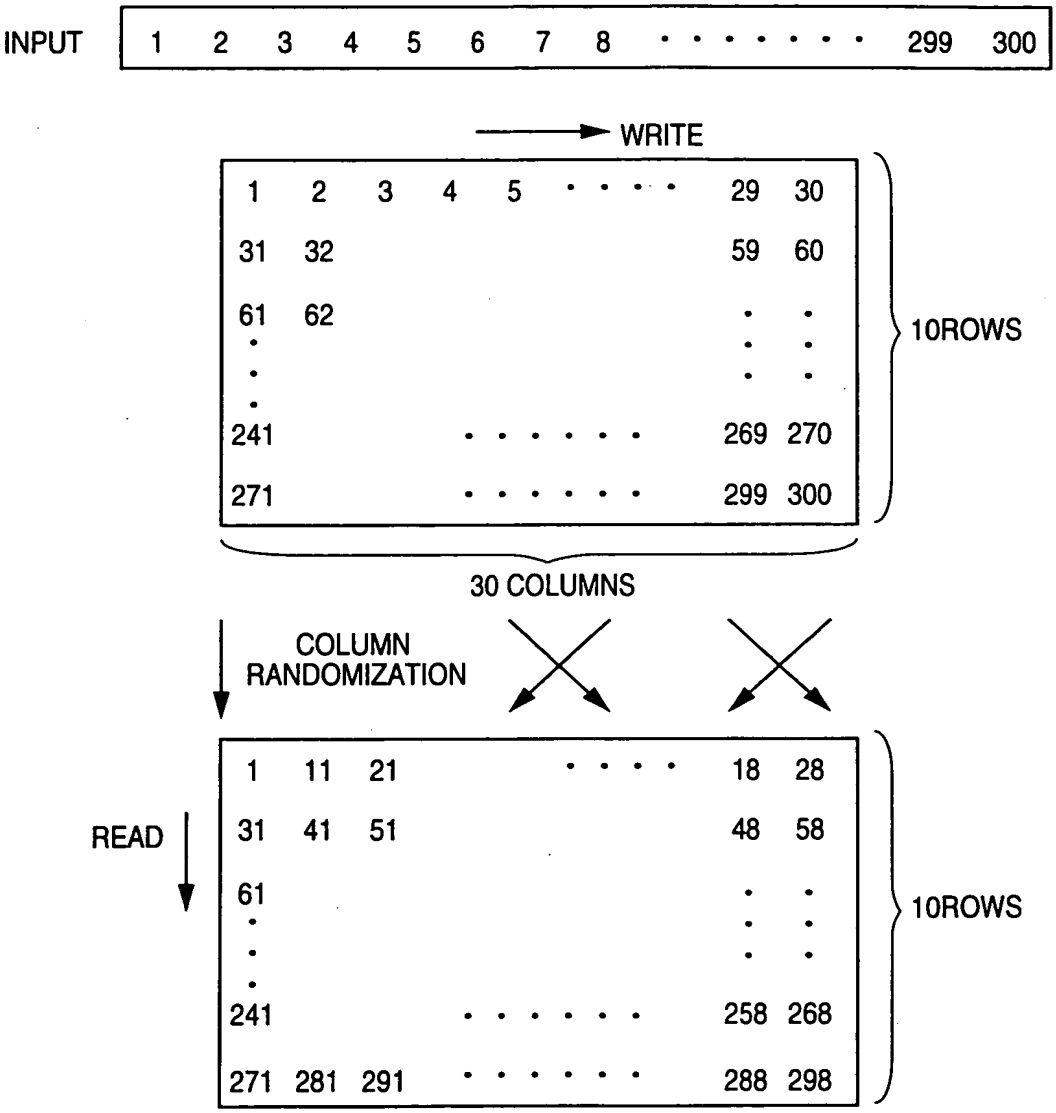

INPUT
1 2 3 4 5 6 7 8 . . . . . 299 300
WRITE
1 2 3 4 5 . . . . 29 30
31 32 59 60
61 62
241 269 270
271 299 300
10ROWS
30 COLUMNS
COLUMN RANDOMIZATION
READ
1 11 21 . . . . 18 28
31 41 51 48 58
61
241 258 268
271 281 291 288 298
10ROWS

FIG.27

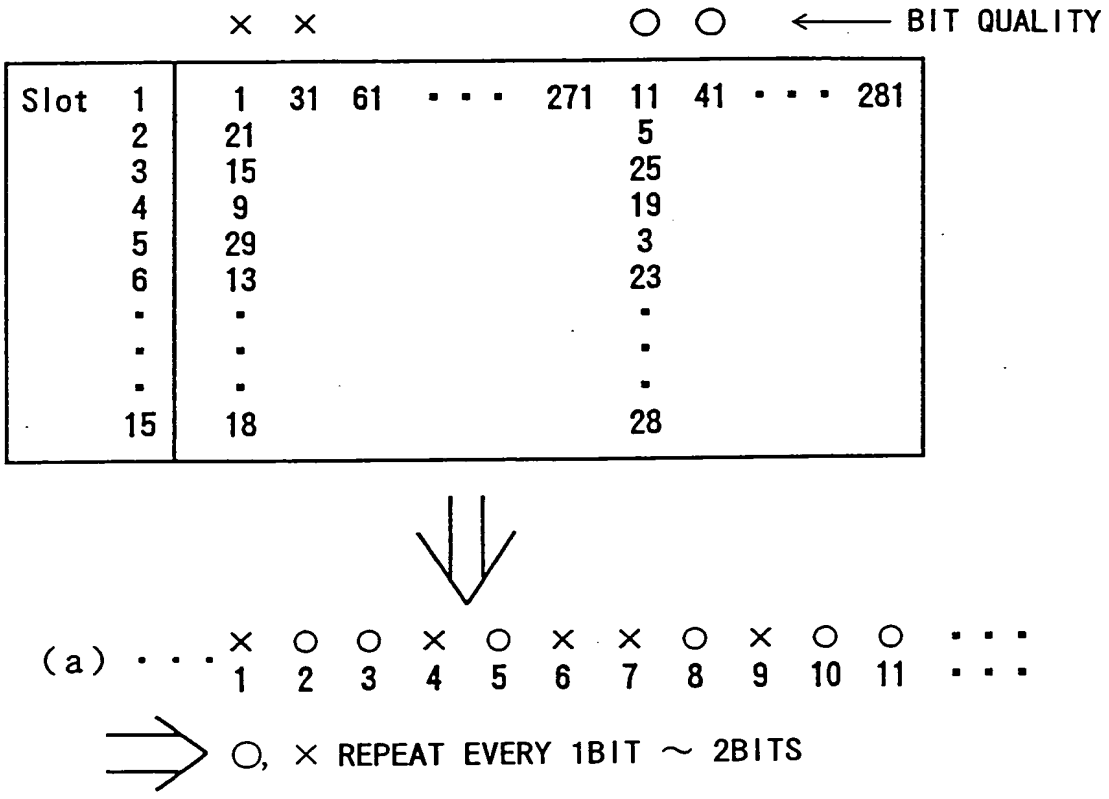
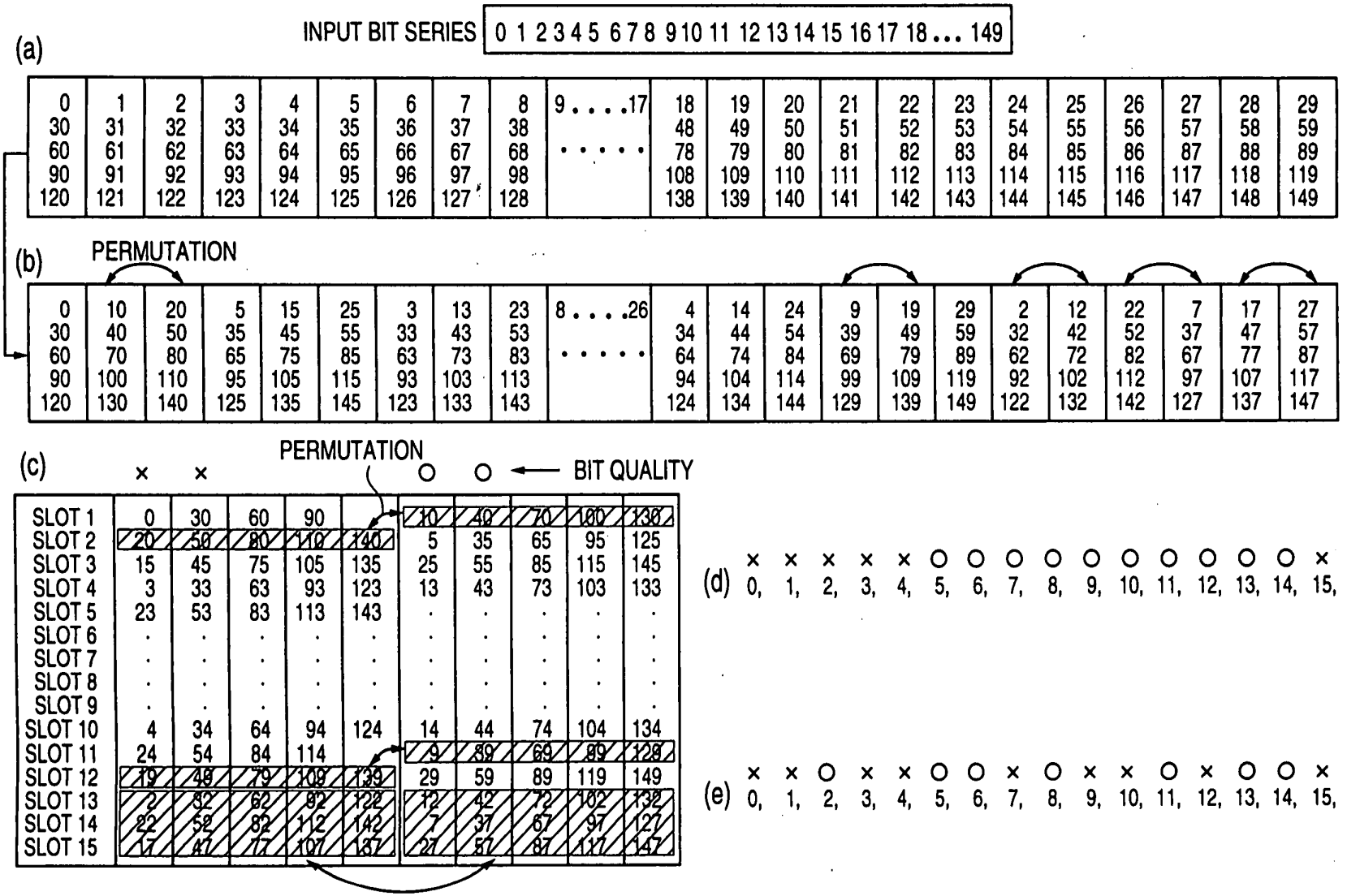

× ×
○ ○
BIT QUALITY
Slot
1 2 3 4 5 6 15
1 31 61 271 11 41 281
21 5
15 25
9 19
29 3
13 23
18 28
(a)
× ○ ○ × ○ × × ○ × ○ ○
1 2 3 4 5 6 7 8 9 10 11
○, × REPEAT EVERY 1BIT ~ 2BITS

FIG. 28



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09/720260